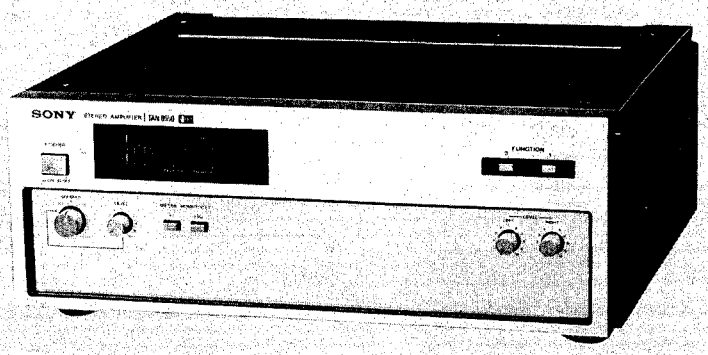
TAN-8550

USA Model



STEREO POWER AMPLIFIER

SPECIFICATIONS

GENERAL

System: Phase-linear dc stereo amplifier in direct-coupling V-FET pure-complementary symmetry circuit

Power requirements: 120 V ac, 60 Hz

Power consumption: 260 W

AC outlet: 1 unswitched, 200 W

Dimensions: 440 (w) x 170 (h) x 410 (d) mm
17 3/8 (w) x 6 3/4 (h) x 16 1/8 (d) inches

Weight: 19 kg (41 lb 14 oz), net
23 kg (50 lb 11 oz), in shipping carton

POWER AMPLIFIER SECTION

Continuous RMS power output: (rated output) (less than 0.1 % THD)
110 W + 110 W/8 Ω
110 W + 110 W/4 Ω
at 1 kHz, both channels driven simultaneously

100 W + 100 W/8 Ω
at 20 Hz ~ 20 kHz, both channels driven simultaneously

Power bandwidth: (IHF) 5 Hz ~ 50 kHz

Harmonic distortion: 0.1 % at rated output
0.05 % at 1 W output

IM distortion: (60 Hz : 7 kHz = 4 : 1)
0.1 % at rated output
0.05 % at 1 W output

Damping factor: 200 (8 Ω, at 1 kHz, at SPEAKER DIRECT terminal)

Residual noise: 0.01 μW

Frequency response: (at 1 W output)
20 Hz ~ 100 kHz $^{+0}_{-3}$ dB (NORMAL)
DC ~ 100 kHz $^{+0}_{-1}$ dB (TEST)

Inputs: Sensitivity 1.0 V RMS (for rated output)
Impedance: 50 kΩ

OPTICAL PEAK PROGRAM METER

Frequency response: 30 Hz ~ 30 kHz $^{+0}_{-3}$ dB

Measuring range: 1 ~ 200 W
(METER SENSITIVITY set to "1")
0.1 ~ 20 W
(METER SENSITIVITY set to "1/10")

SONY®

SERVICE MANUAL

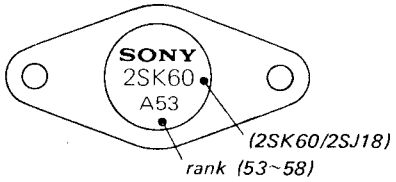
SERVICING NOTES

1. Apply the rated ac line voltage to the set directly. Do not increase the voltage gradually by using a variable transformer or other such instrument: this will cause a V-FET failure.

2. V-FET Replacement

TAN-8550 uses six V-FETs (2SK60...3 pcs, 2SJ18...3 pcs) in each channel of its power amplifier. Both 2SK60 and 2SJ18 are divided into six ranks according to their Vsgo (gate-source voltage) and Vp (cut-off voltage). The bias resistors of the V-FET differ from a rank to a rank, and it is necessary to use the same rank of V-FETs in the same channel.
If you cannot obtain the same rank of V-FET as the one used in the repairing set, replace all six V-FETs. At the same time, replace the bias resistors according to the table given at right.

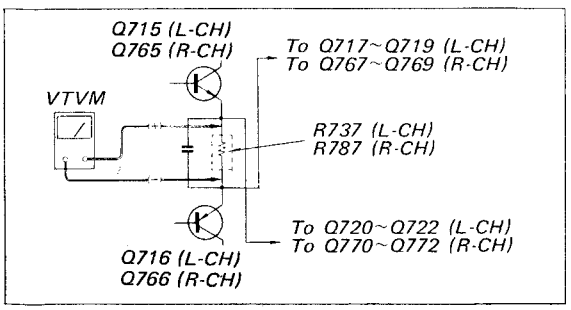
Rank of 2SK60 2SJ18	Bias Resistors	
	R725, R775	R731, R781 R732, R782
53	33 kΩ	1.8 kΩ
54	33 kΩ	1.5 kΩ
55	33 kΩ	1.2 kΩ
56	30 kΩ	1.0 kΩ
57	30 kΩ	1.0 kΩ
58	30 kΩ	820 Ω

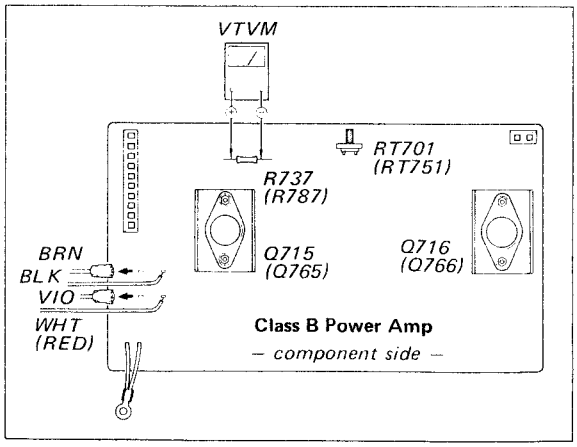


3. After the replacement of V-FET, carry out the following check to avoid further occurance of V-FET failure.

1) Turn off the power of TAN-8550.
2) Remove the heat sink duct.
3) Disconnect the brown and the violet lead wires from the pins on the CLASS B POWER AMP BOARD. See the figure at bottom right.
4) Turn on the power and check the voltage across R737 (L-CH)/R787 (R-CH). If the reading does not agree with the value given in the table at right, try adjusting RT701 (L-CH)/RT751 (R-CH).
5) If adjusting RT701/RT751 still does not give correct reading, check Q713 ~ Q716 (L-CH)/Q763 ~ Q766 (R-CH). Failure of these transistors will cause V-FET failure.
6) After the check, turn off the power of the set and put back the two lead wires mentioned in step 3.

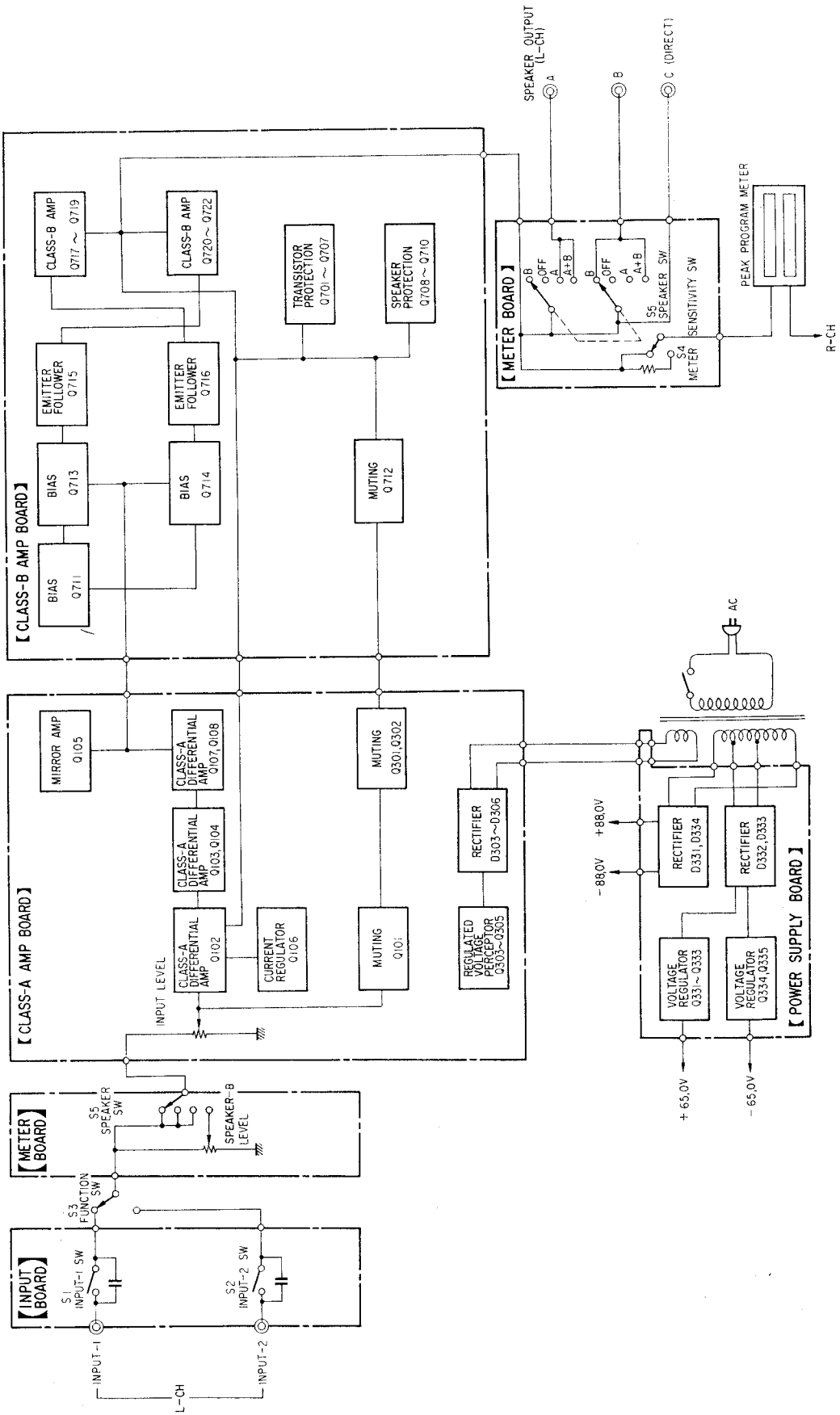
Rank of 2SK60 2SJ18 used in the set	Voltage drop across R737 (L-CH) R787 (R-CH)
53	18.8 ~ 23.8 V
54	23.8 ~ 28.8 V
55	28.8 ~ 33.8 V
56	33.8 ~ 38.8 V
57	38.8 ~ 43.8 V
58	43.8 ~ 48.8 V





SECTION 1

BLOCK DIAGRAM



SECTION 2
DISASSEMBLY AND REPLACEMENT

2-1. PANELS REMOVAL

Top Cover

Remove ❶ .

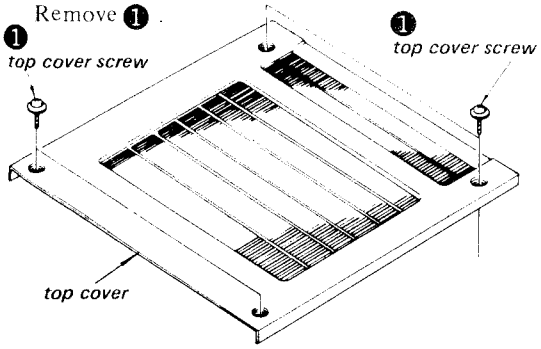


Fig. 2-1.

Wooden Side Panel

Remove ❷ .

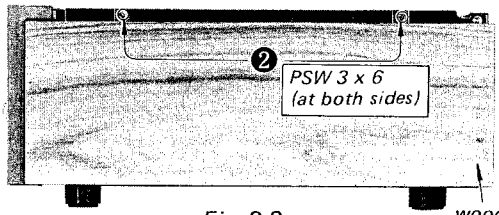


Fig. 2-2.

Front Panel

Remove ❸ and ❹ .

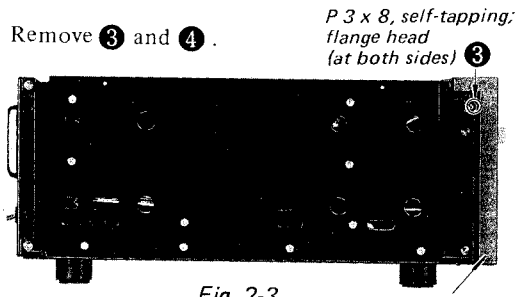


Fig. 2-3.

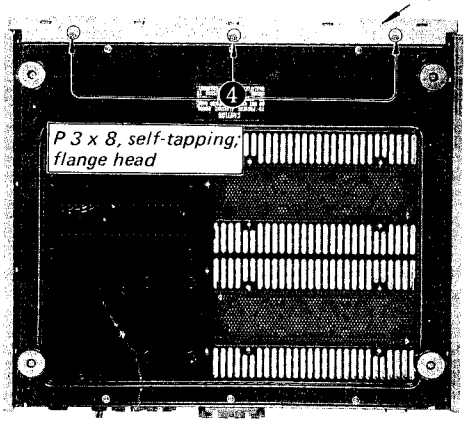


Fig. 2-4.

Peak Program Meter Cover and Control Panel

Remove ❺ for peak program meter cover removal.
Remove ❻ for control panel removal.

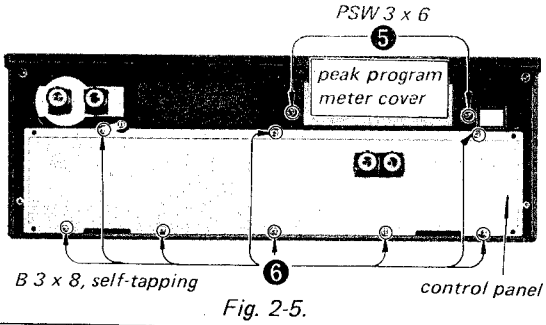


Fig. 2-5.

Front Subchassis and Rear Panel

Remove ❼ and ❽ for front subchassis removal.
Remove ❾ and ❿ for rear panel removal.

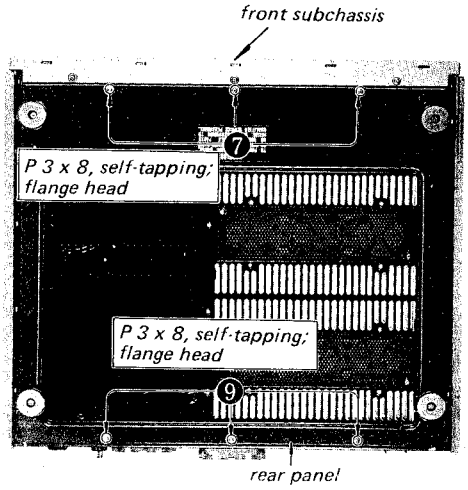


Fig. 2-6.

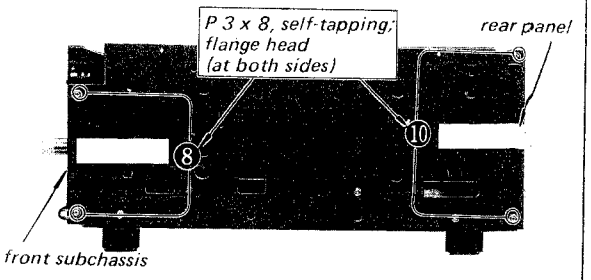


Fig. 2-7

2-2. CIRCUIT BOARD REMOVAL AND V-FET REPLACEMENT

Note: Be careful with the position and the direction of the connectors when reinstalling them to the circuit boards. See Fig. 2-8.

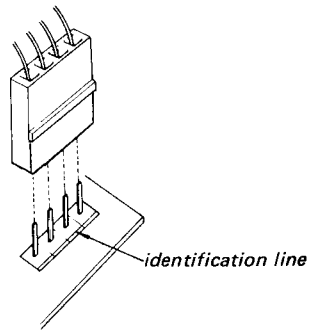


Fig. 2-8.

Class-A Amp Board and Meter Board

Remove ⑪ , ⑫ for meter board removal.
Remove ⑬ for class-A amp board removal.

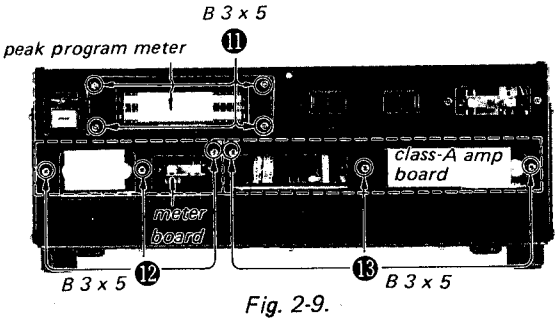


Fig. 2-9.

Input Board

Remove ⑭ and ⑮

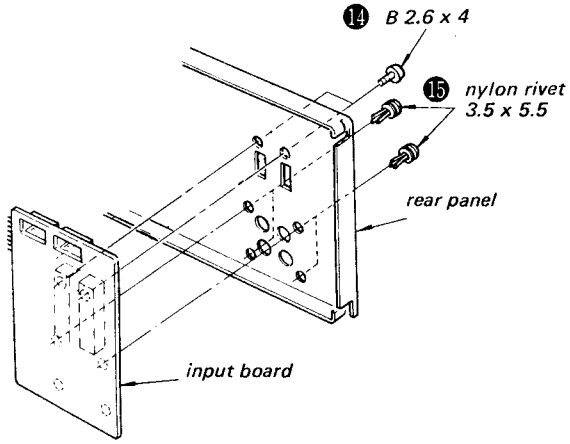


Fig. 2-10.

Class-B Amp Board

Take out the heat sink duct by removing ⑯ .

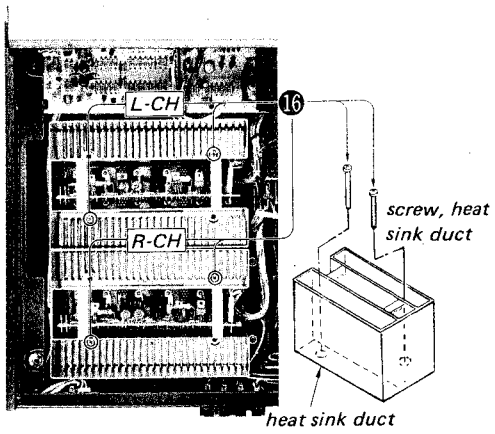


Fig. 2-11.

Remove ⑰ and take out the class-B amp board along with the heat sink.

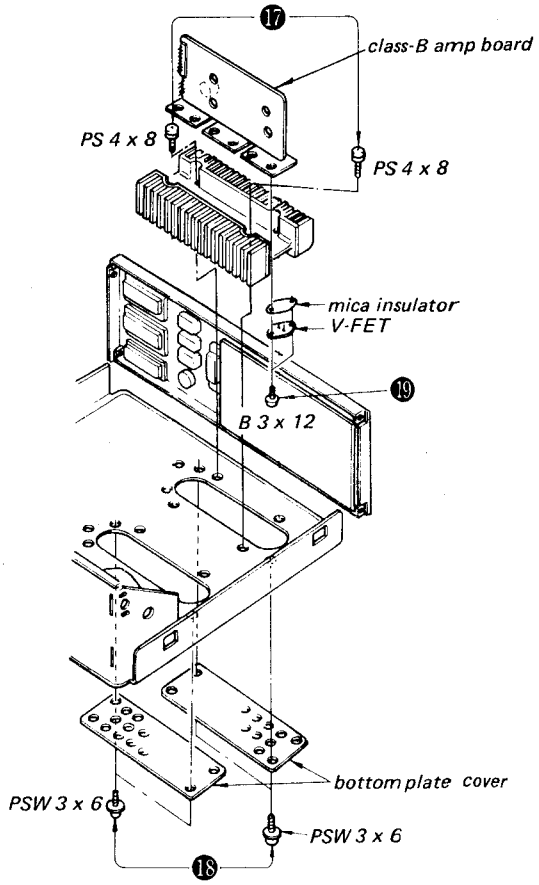


Fig. 2-12.

V-FET Replacement

Remove ⑱ and ⑲ .

Note: When replacing V-FET, refer to page 2 .

SECTION 3

ADJUSTMENTS

Note: Allow about five minutes for warm-up.

3-1. LAMP VOLTAGE ADJUSTMENT

Class-A Amp Board

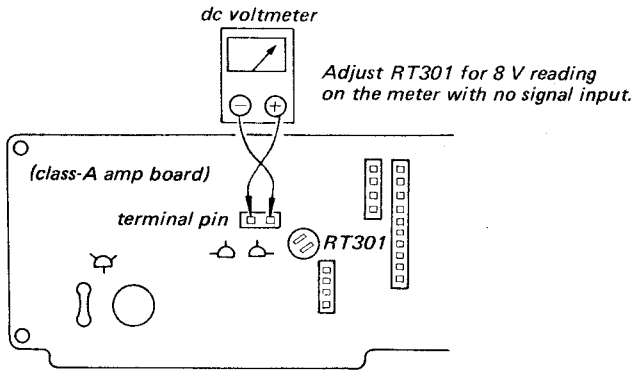


Fig. 3-1.

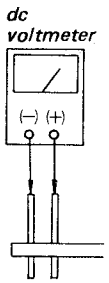
3-2. DC BALANCE AND BIAS ADJUSTMENT

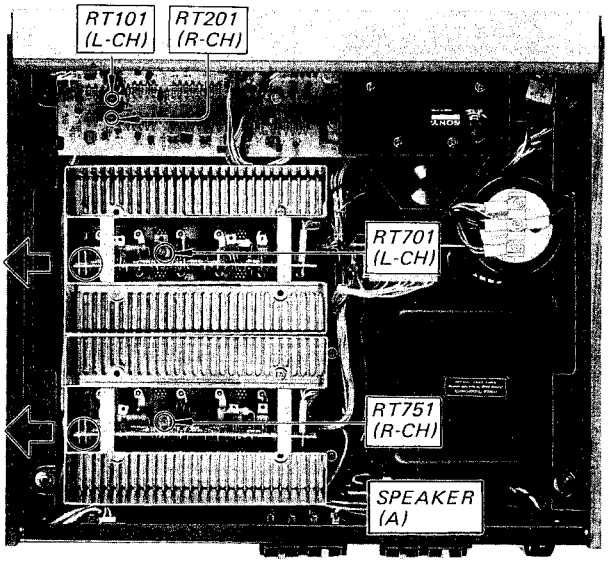
Note: 1. Apply the rated ac line voltage to the set directly. Do not increase the voltage gradually by using a variable transformer or other such instruments: this will cause a V-FET failure.

2. Alternately repeat the two adjustments two or three times.

DC Bias Adjustment

Adjust RT701 (L-CH) and RT751 (R-CH) for 125 mV dc with no signal input.





DC Balance Adjustment

Adjust RT101 (L-CH) and RT201 (R-CH) for 0 V dc with no signal input.

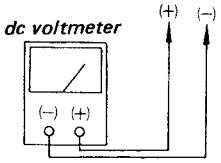


Fig. 3-2.

3-3. PEAK PROGRAM METER ADJUSTMENT AND CHECK

Test Setup:

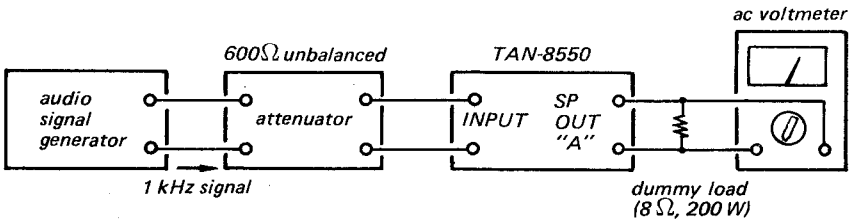


Fig. 3-3.

Procedure:

1. Adjust the attenuator for 28.3 V (100 W) reading on the ac voltmeter.
2. Set the METER SENSITIVITY switch to "x1", and adjust RT181 (L-CH) and RT281 (R-CH) (See Fig. 3-4) for 100 W reading on the peak program meter.
3. Check the following items:

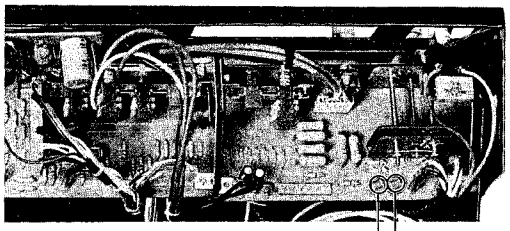
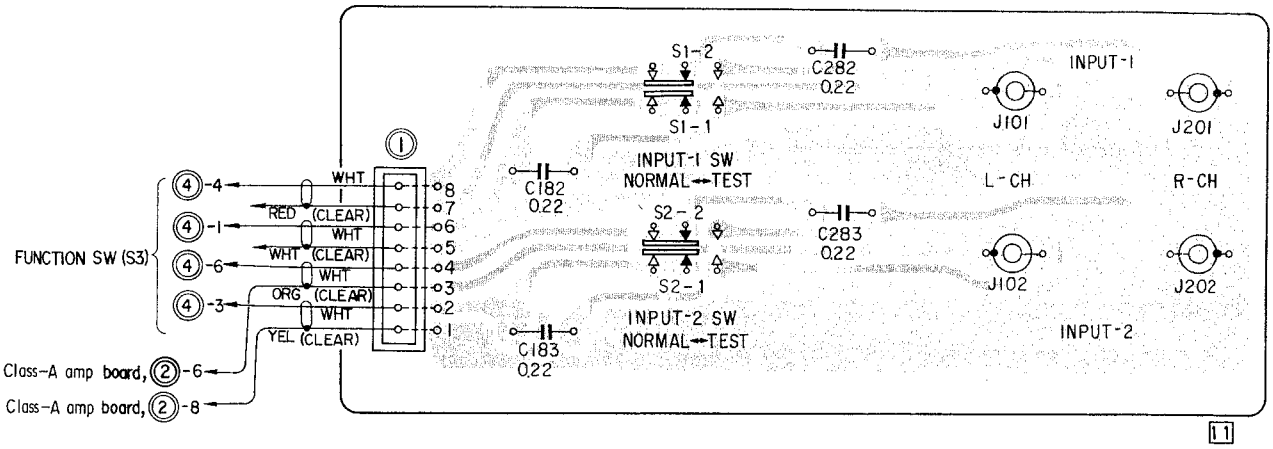


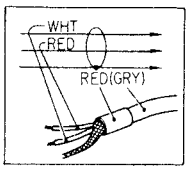
Fig. 3-4.

Step	Attenuator Setting	METER SENSITIVITY Switch Setting	PEAK PROGRAM METER Indication
3-1	Decrease 10 dB from step 2.	x1	10 W
3-2	Same as step 3-1	x1/10	100 W
3-3	Decrease 10 dB from step 3-2.	x1/10	10 W
3-4	Same as step 3-3	x1	1 W

SECTION 4
DIAGRAMS

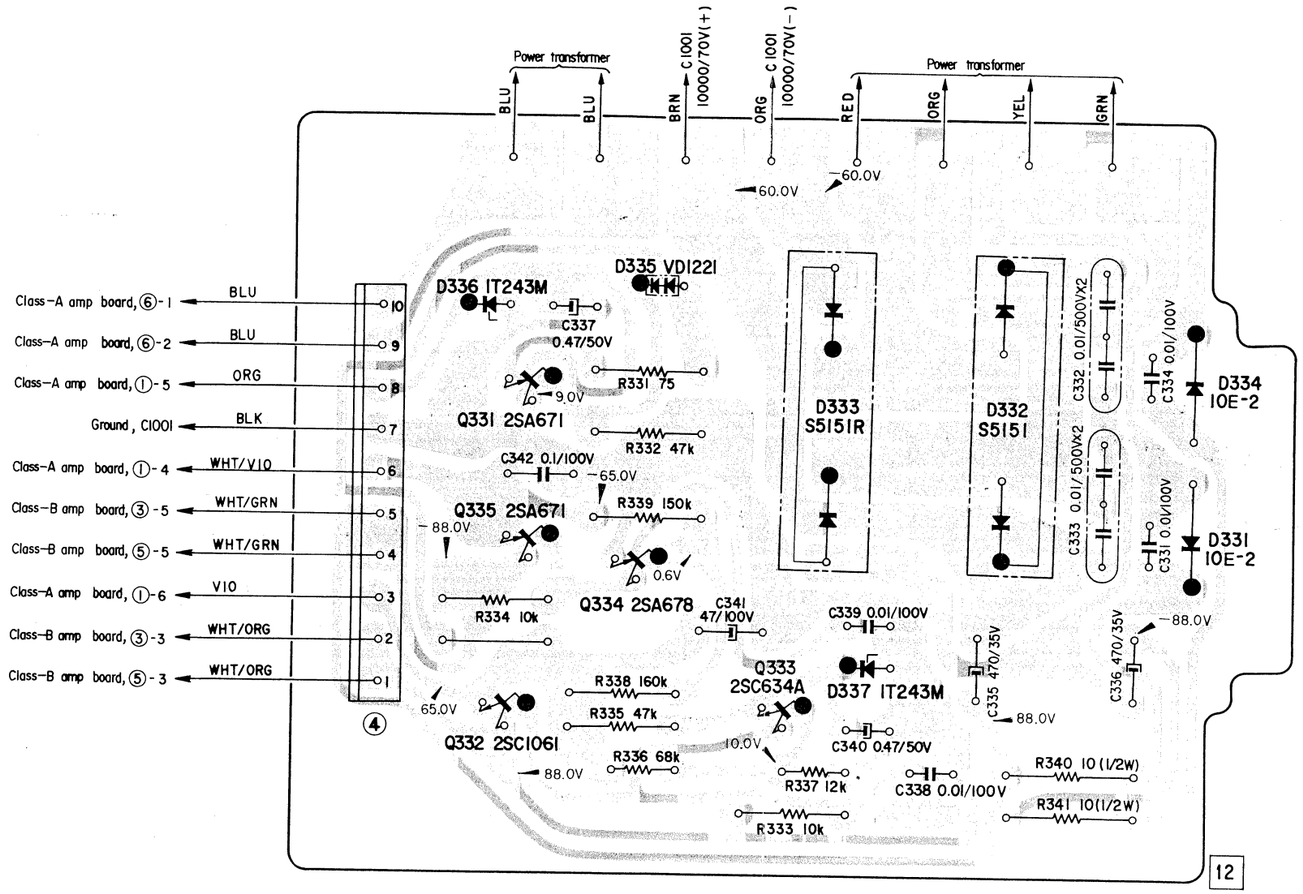
4-1. MOUNTING DIAGRAM – Input Board –
– Conductor Side –

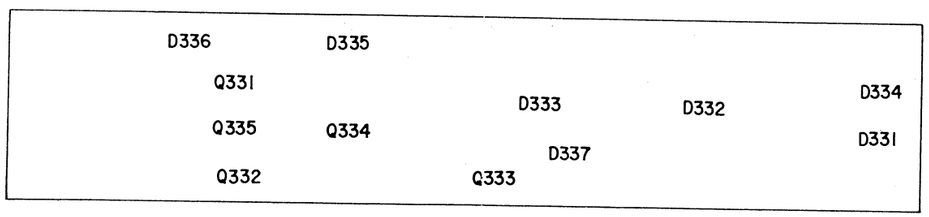




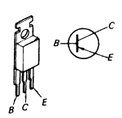
4-2. MOUNTING DIAGRAM -- Power Supply Board --

-- Conductor Side --

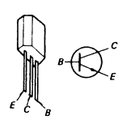




2SA671



2SC634A



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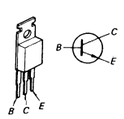
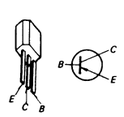
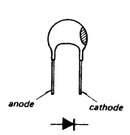


2SA678



VD-1221



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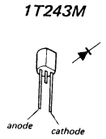
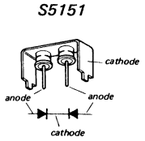
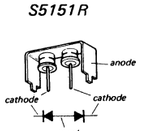


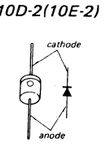
S5151



S5151R

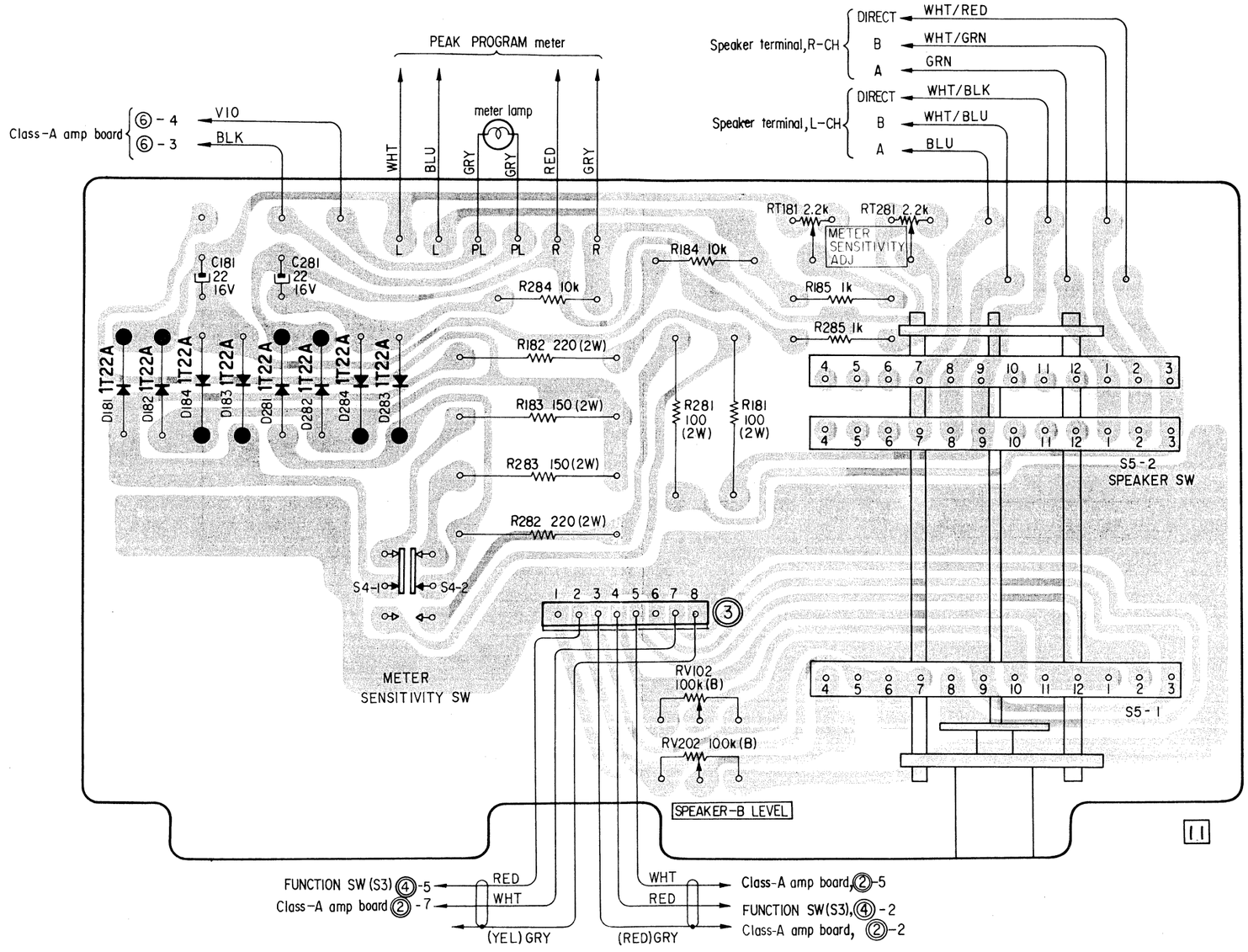


10D-2(10E-2)

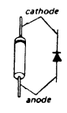


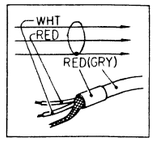
4-3. MOUNTING DIAGRAM — Meter Board —

— Conductor Side —



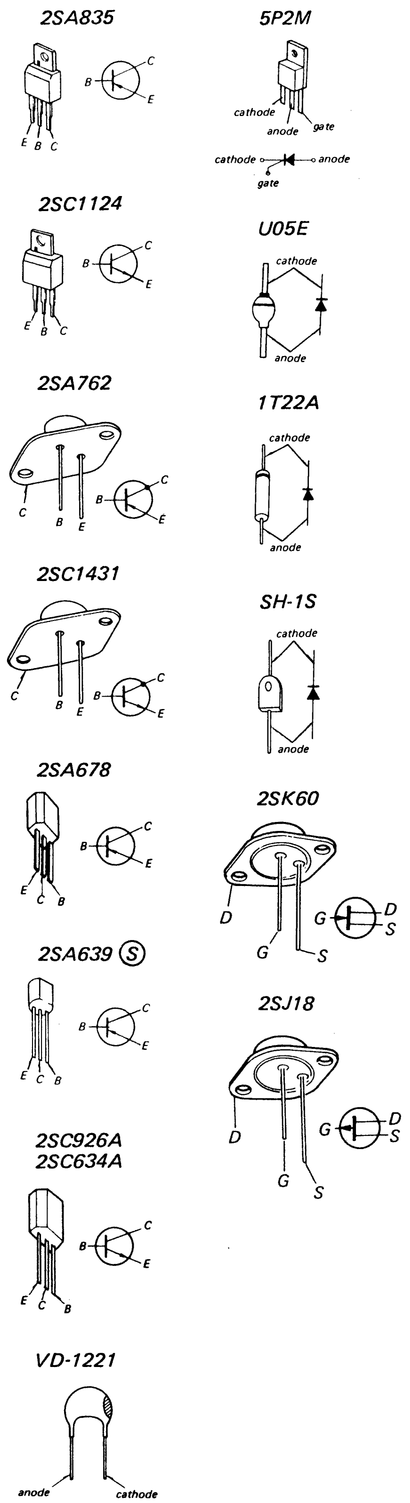
1T22A





4-4. MOUNTING DIAGRAM – Class-B Power Amplifier Board –

– Conductor Side –



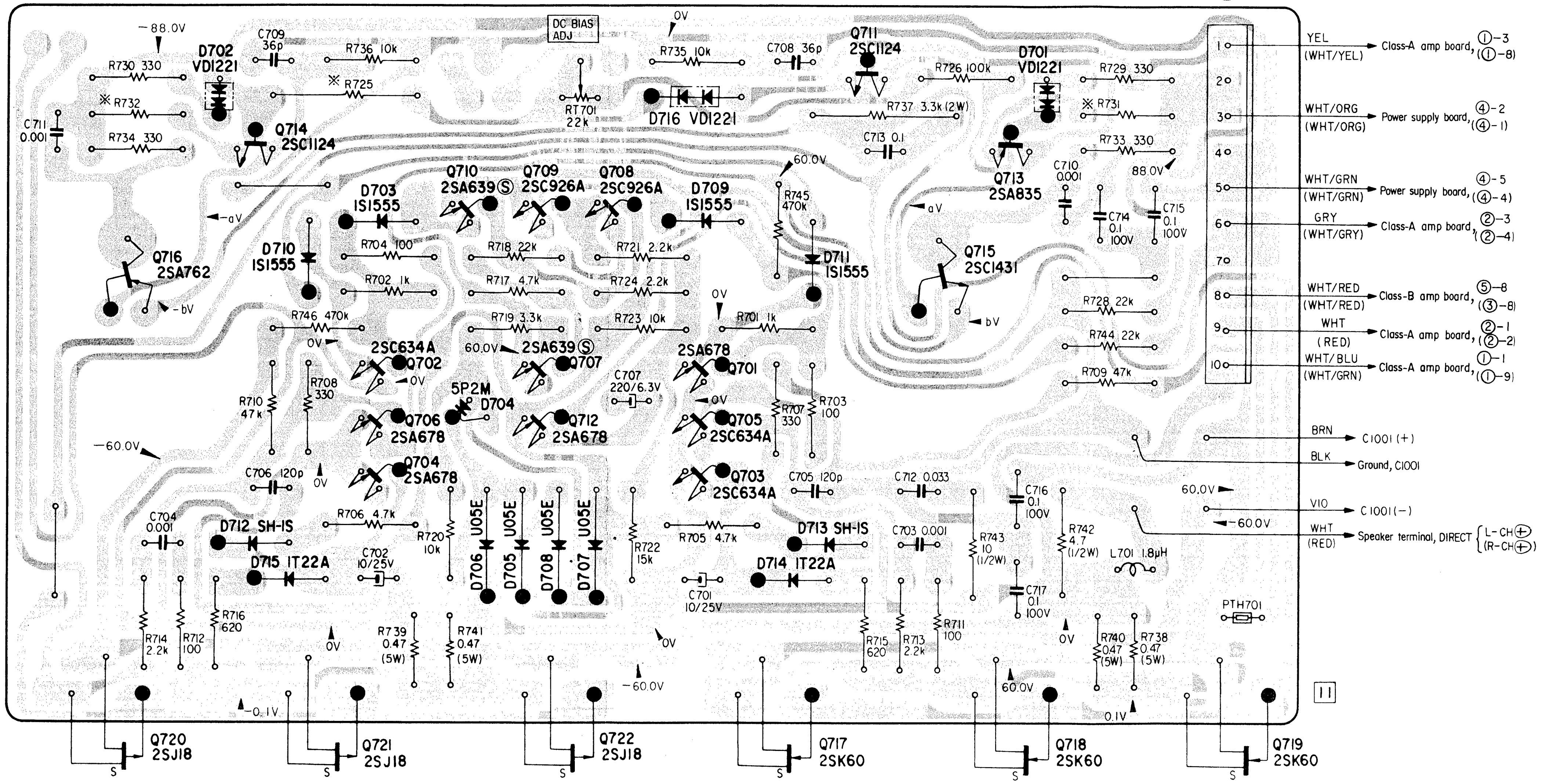
Q717~Q722	※R725,775	※R 731,732 781,782	a	b
2SK60 / 2SJ18 -53	33k	1.8k	10.0V ~ 12.5V	9.4V ~ 11.9V
〃 -54	33k	1.5k	12.5V ~ 15.0V	11.9V ~ 14.4V
〃 -55	33k	1.2k	15.0V ~ 17.5V	14.4V ~ 16.9V
〃 -56	30k	1k	17.5V ~ 20.0V	16.9V ~ 19.4V
〃 -57	30k	1k	20.0V ~ 22.5V	19.4V ~ 21.9V
〃 -58	30k	820	22.5V ~ 25.0V	21.9V ~ 24.4V

L-CH

Note: R-CH is the same as L-CH.
The reference numbers in R-channel start from 750's.

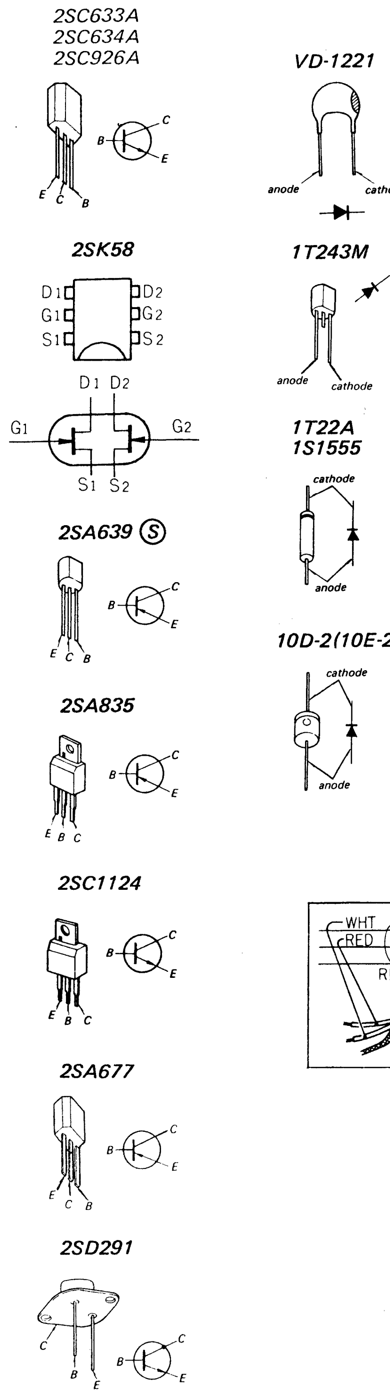
Note: ( ) mark shows the lead wire of R channel.

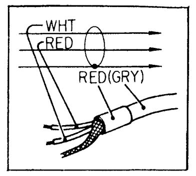
L-CH ③
R-CH ⑤

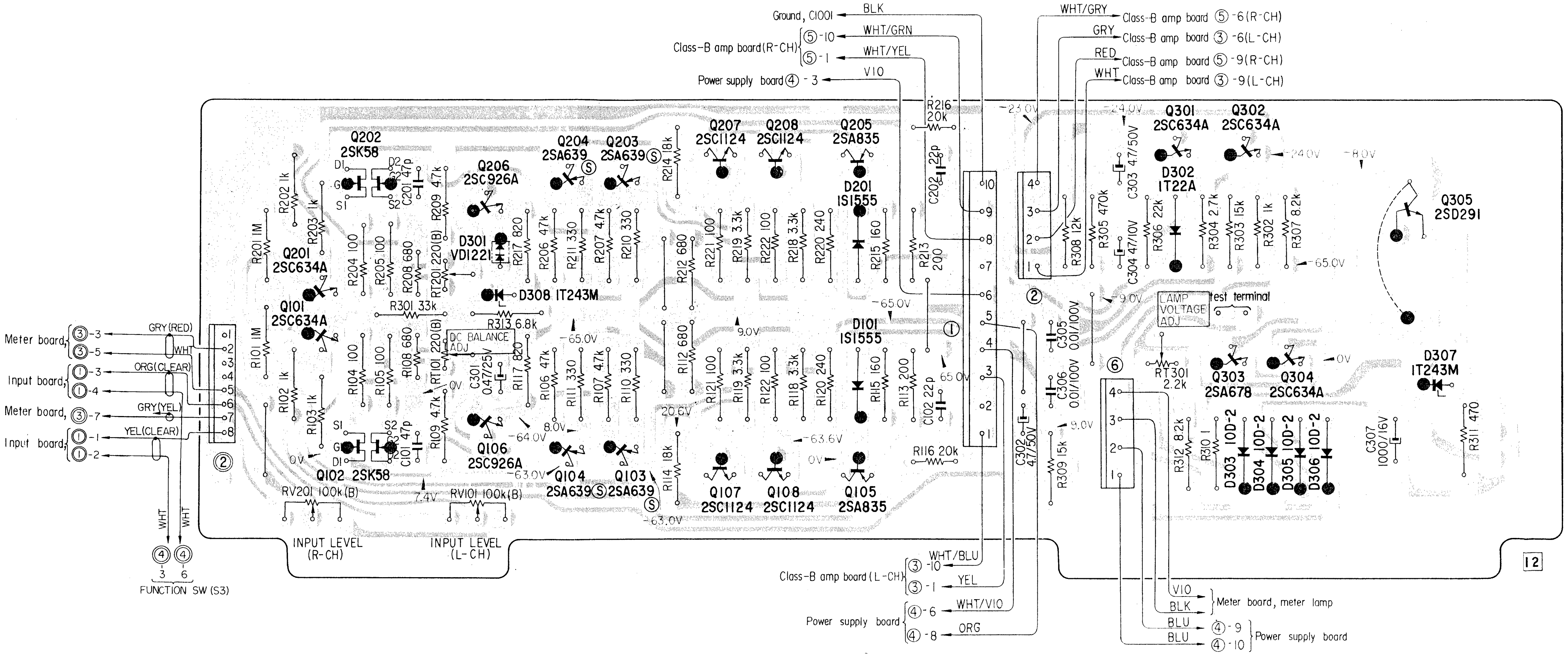


Q	Q714 Q711 Q713 Q710 Q709 Q708 Q716 Q715 Q702 Q707 Q701 Q706 Q712 Q705 Q704 Q703 Q720 Q721 Q722 Q717 Q718 Q719
D	D702 D716 D701 D703 D709 D710 D704 D711 D712 D713 D715 D706 D705 D708 D707 D714

4-5. MOUNTING DIAGRAM – Class-A Power Amplifier Board –
– Conductor Side –







Transistor

Q202 Q206 Q204 Q203 Q207 Q208 Q205 Q301 Q302 Q305

Q201 Q101 Q303 Q304

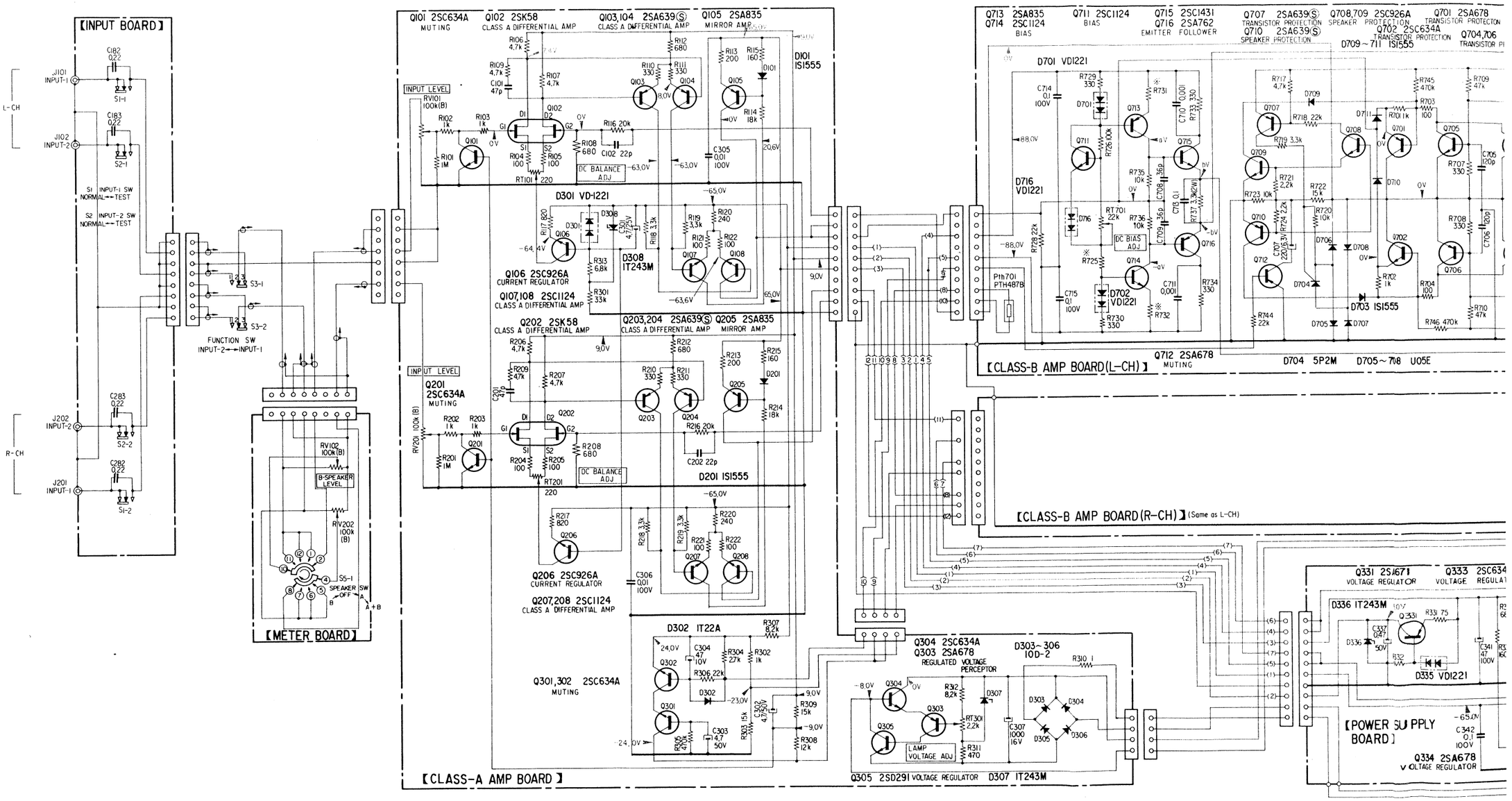
Q102 Q106 Q104 Q103 Q107 Q108 Q105

Diode

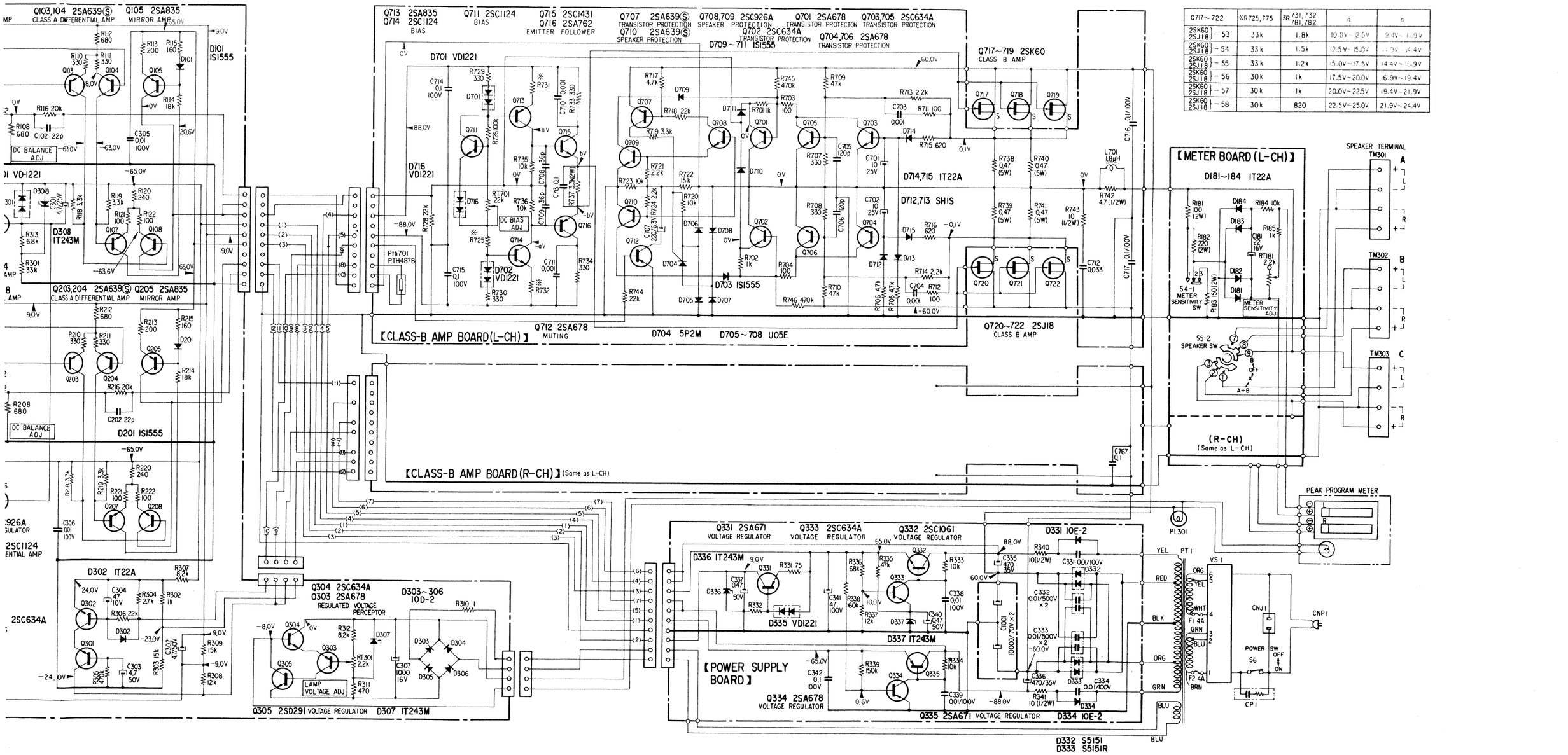
D301 D308 D201 D101 D302 D307

D303 D304 D305 D306

4-6. SCHEMATIC DIAGRAM



Ref. No.	Description	Position
S1	INPUT-1	NORMAL
S2	INPUT-2	NORMAL
S3	FUNCTION	INPUT-1
S4	METER SENSITIVITY	x1
S5	SPEAKER	B
S6	POWER	ON



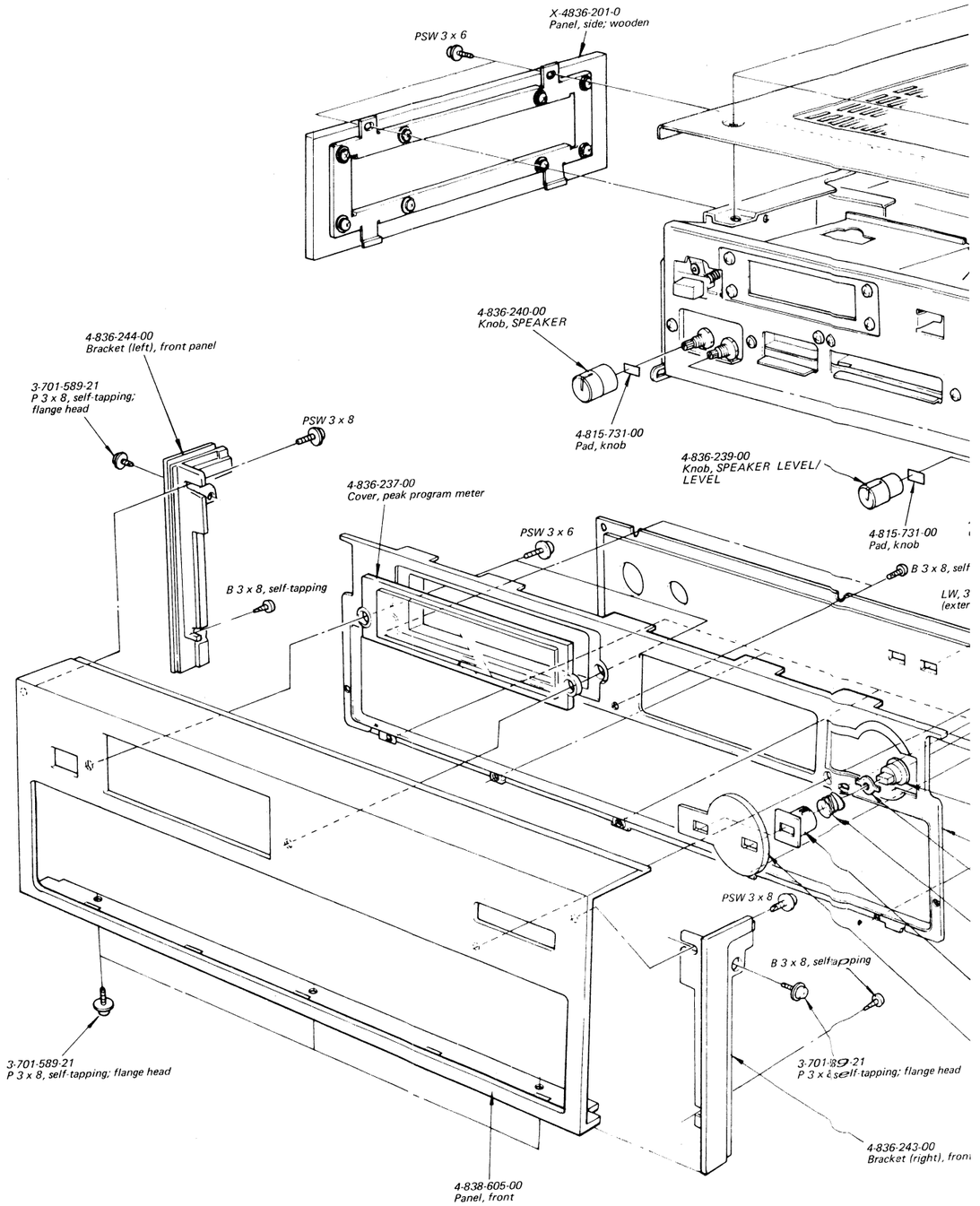
Q717~722	※R725,775	※R731,732 781,782	a	b
2SK60 / 2SJ18 - 53	33k	1.8k	10.0V~12.5V	9.4V~11.9V
2SK60 / 2SJ18 - 54	33k	1.5k	12.5V~15.0V	11.9V~14.4V
2SK60 / 2SJ18 - 55	33k	1.2k	15.0V~17.5V	14.4V~16.9V
2SK60 / 2SJ18 - 56	30k	1k	17.5V~20.0V	16.9V~19.4V
2SK60 / 2SJ18 - 57	30k	1k	20.0V~22.5V	19.4V~21.9V
2SK60 / 2SJ18 - 58	30k	820	22.5V~25.0V	21.9V~24.4V

Note:

All resistance values are in ohms. (k = 1,000, M = 1,000 k)
All capacitance values are in μF except as indicated with p, which means μμF.
All voltages are dc measured with a VOM which has an input impedance of 20 k ohms/volt. No signal in.
Voltage variations may be noted due to normal production tolerances.

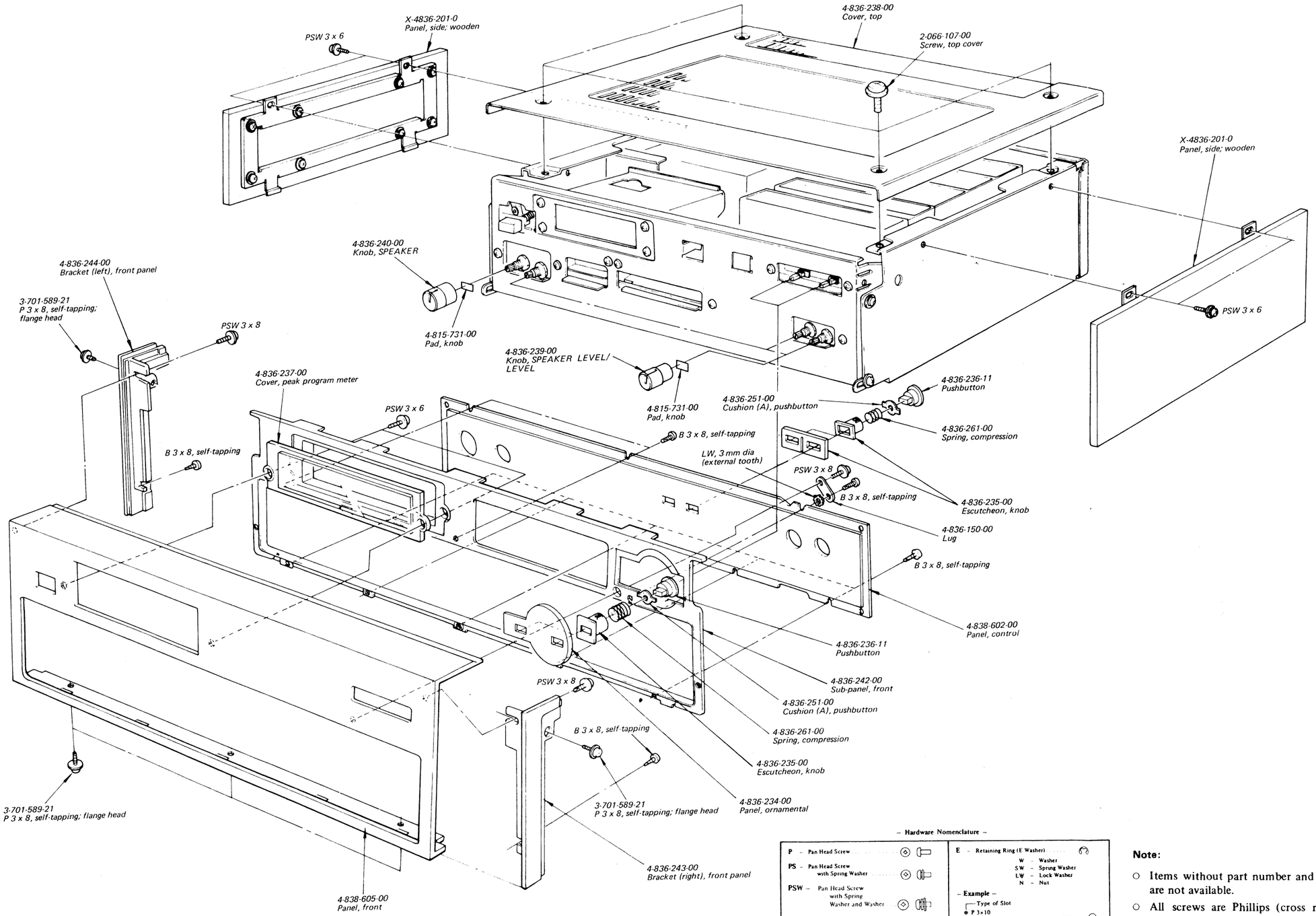
MEMO

SECTION 5
EXPLODED VIEWS



SECTION 5
EXPLODED VIEWS

(1)



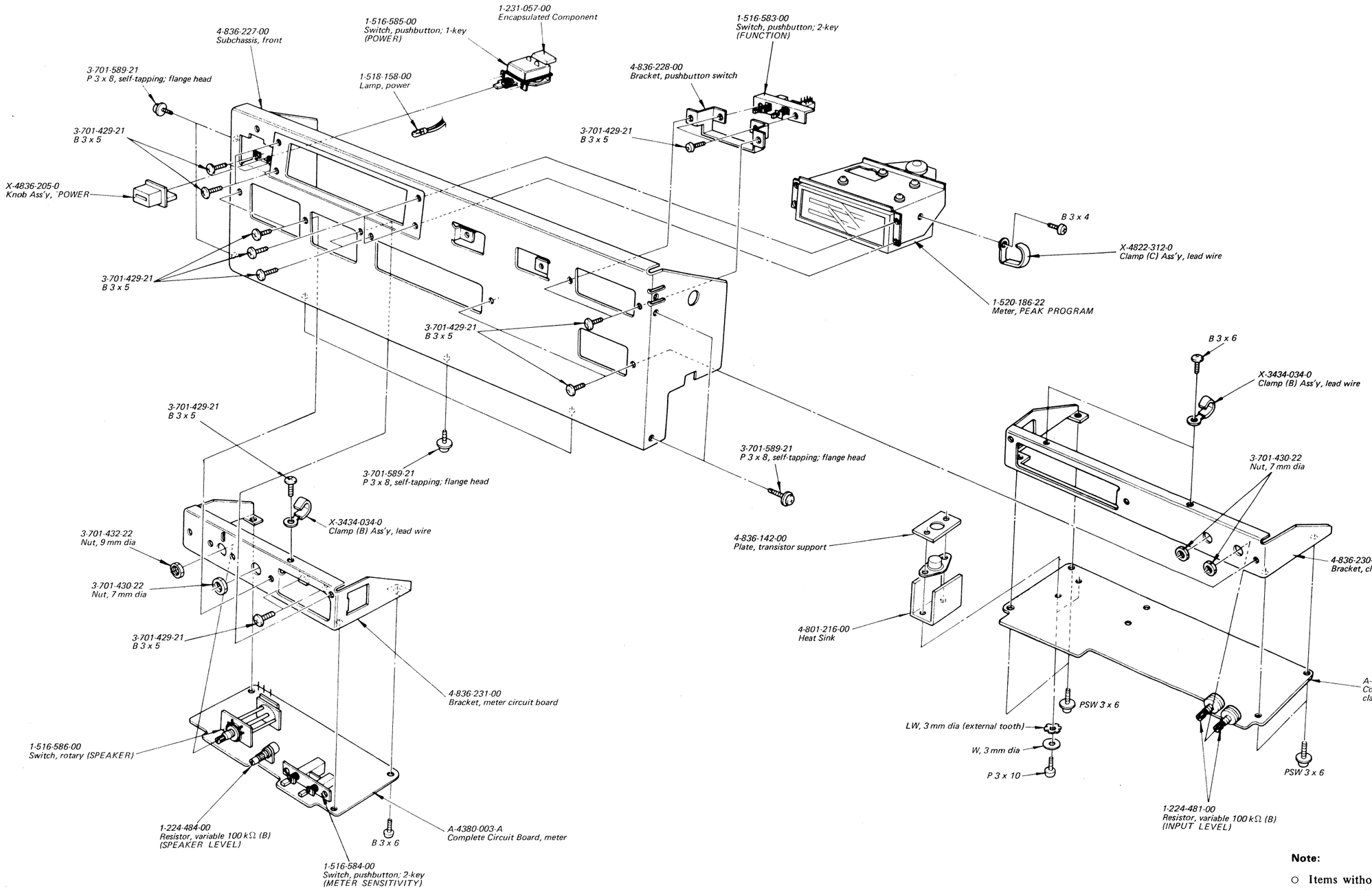
– Hardware Nomenclature –

P – Pan Head Screw	E – Retaining Ring (E Washer)
PS – Pan Head Screw with Spring Washer	W – Washer SW – Spring Washer LW – Lock Washer N – Nut
PSW – Pan Head Screw with Spring Washer and Washer	– Example – Type of Slot ● P 3×10 Length in mm (L) Diameter in mm (D) Type of Head
B – Binding Head Screw	
SC – Set Screw	

Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

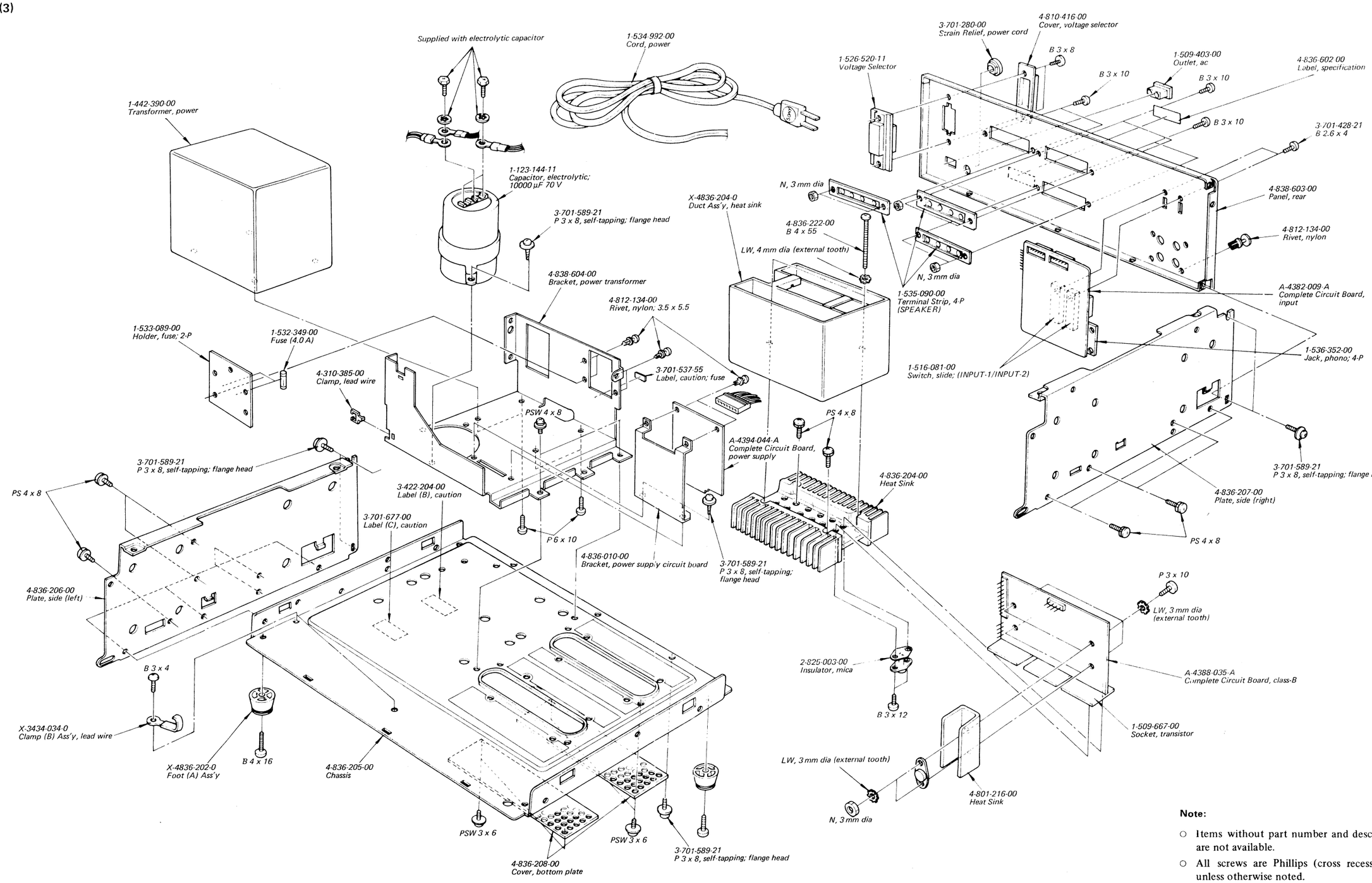
(2)



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (−) = slotted head

(3)



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

SECTION 6

ELECTRICAL PARTS LIST

Ref. No.	*Part No.*	*Description*
		COMPLETE CIRCUIT BOARDS
	A-4380-003-A	Meter
	A-4382-009-A	Input
	A-4388-034-A	Class A amp
	A-4388-035-A	Class B amp
	A-4394-044-A	Power Supply
		SEMICONDUCTORS
		Transistors
Q101(Q201)		2SC634A
Q102(Q202)		2SK58 (FET)
Q103(Q203)		2SA639S
Q104(Q204)		2SA639S
Q105(Q205)		2SA835
Q106(Q206)		2SC926A
Q107(Q207)		2SC1124
Q108(Q208)		2SC1124
Q301, Q302		2SC634A
Q303		2SA678
Q304		2SC634A
Q305		2SD291
Q331		2SA671
Q332		2SC1061
Q333		2SC634A
Q334		2SA678
Q335		2SA671
Q701(Q751)		2SA678
Q702(Q752)		2SC634A
Q703(Q753)		2SC634A
Q704(Q754)		2SA678
Q705(Q755)		2SC634A
Q706(Q756)		2SA678
Q707(Q757)		2SA639S
Q708(Q758)		2SC926A
Q709(Q759)		2SC926A
Q710(Q760)		2SA639S
Q711(Q761)		2SC1124
Q712(Q762)		2SA678
Q713(Q763)		2SA835
Q714(Q764)		2SC1124
Q715(Q765)		2SC1431
Q716(Q766)		2SA762
Q717(Q767)		2SK60 (FET)
Q718(Q768)		2SK60 (FET)
Q719(Q769)		2SK60 (FET)
Q720(Q770)		2SJ18 (FET)
Q721(Q771)		2SJ18 (FET)
Q722(Q772)		2SJ18 (FET)
		Diodes
D101(D201)		1S1555
D181~D184 (D281~D284)		1T22A
D301		VD-1221
D302		1T22A
D303~D306		10D-2
D307, D308		1T243M
D331		10E-2
D332		S5151
D333		S5151R
D334		10E-2
D335		VD-1221
D336, D337		1T243M
D701(D751)		VD-1221
D702(D752)		VD-1221
D703(D753)		1S1555
D704(D754)		5P2M
D705 ~ D708 (D755 ~ D758)		U05E
D709 ~ D711 (D759 ~ D761)		1S1555
D712(D762)		SH-1S
D713(D763)		SH-1S
D714(D764)		1T22A
D715(D765)		1T22A
D716(D766)		VD-1221

Ref. No.	*Part No.*	*Description*

TRANSFORMER AND INDUCTORS

L701(L751)	1-407-592-00	Microinductor, 1.8 μH
PT1	1-442-390-00	Transformer, power

CAPACITORS

Capacitors here are in μF, mylar type unless otherwise noted (p = μμ, elect = electrolytic). The working voltages of 50 volts or less are omitted except for electrolytic type.

C101(C201)	1-101-880-11	47p		ceramic
C102(C202)	1-102-959-11	22p		ceramic
C181(C281)	1-121-990-11	22	16V	elect
C182(C282)	1-105-689-12	0.22		
C183(C283)	1-105-689-12	0.22		
C301	1-121-395-11	4.7	25V	elect
C302, C303	1-121-396-11	4.7	50V	elect
C304	1-121-352-11	47	10V	elect
C305, C306	1-108-657-12	0.01	100V	
C307	1-121-245-11	1000	16V	elect
C331	1-105-713-12	0.01	100V	
C332, C333	1-102-355-11	0.01 (2 pieces)	500V	ceramic
C334	1-105-713-12	0.01	100V	
C335, C336	1-121-941-11	470	35V	elect
C337	1-121-726-11	0.47	50V	elect
C338, C339	1-105-713-12	0.01	100V	
C340	1-121-726-11	0.47	50V	elect
C341	1-123-083-11	47	100V	elect
C342	1-105-725-12	0.1	100V	
C701(C751)	1-121-398-11	10	25V	elect
C702(C752)	1-121-398-11	10	25V	elect
C703(C753)	1-105-661-12	0.001		
C704(C754)	1-105-661-12	0.001		
C705(C755)	1-102-816-11	120p		ceramic
C706(C756)	1-102-816-11	120p		ceramic
C707(C757)	1-121-419-11	220	6.3V	elect
C708(C758)	1-102-964-11	36p		ceramic
C709(C759)	1-102-964-11	36p		ceramic
C710(C760)	1-105-661-12	0.001		
C711(C761)	1-105-661-12	0.001		
C712(C762)	1-105-679-12	0.033		
C713(C763)	1-105-685-12	0.1		
C714(C764)	1-105-725-12	0.1	100V	
C715(C765)	1-105-725-12	0.1	100V	
C716(C766)	1-105-725-12	0.1	100V	
C717(C767)	1-105-725-12	0.1	100V	
C1001	1-123-144-11	10000	70V	elect

RESISTORS

All resistors are in Ω. ±5 %, ¼ W, carbon resistors (except special type) are omitted. Check schematic diagram for the resistance values.
(k = 1000, M = 1000 k)

R108(R208)	1-212-529-11	680	±1 %		metal-oxide
R116(R216)	1-212-685-11	20 k	±1 %		metal-oxide
R181(R281)	1-206-640-11	100		2 W	metal-oxide
R182(R282)	1-206-648-11	220		2 W	metal-oxide
R183(R283)	1-206-644-11	150		2 W	metal-oxide
R336	1-212-698-11	68 k	±1 %		metal-oxide
R337	1-212-680-11	12 k	±1 %		
R340, R341	1-202-525-11	10		½ W	composition
R725(R775)	1-206-699-11	30 k		2 W	metal-oxide
R725(R775)	1-206-700-11	33 k		2 W	metal-oxide
R737(R787)	1-206-676-11	3.3 k		2 W	
R738(R788)	1-217-158-11	0.47		5 W	wirewound
R739(R789)	1-217-158-11	0.47		5 W	wirewound
R740(R790)	1-217-158-11	0.47		5 W	wirewound
R741(R791)	1-217-158-11	0.47		5 W	wirewound
R742(R792)	1-202-517-11	4.7		½ W	composition
R743(R793)	1-202-525-11	10		½ W	composition
RT101 (RT201)	1-224-550-00	220, adjustable (dc balance adj.)			
RT181 (RT281)	1-224-250-00	2.2 k, adjustable (meter sens. adj.)			
RT301	1-224-250-00	2.2 k, adjustable (lamp voltage adj.)			

Ref. No.	*Part No.*	*Description*
RT701 (RT751)	1-224-491-00	22 k, adjustable (dc bias adj.)
RV101 (RV201)	1-224-481-00	100 k (B), variable (INPUT LEVEL)
RV102 (RV202)	1-224-484-00	100 k (B), variable (SPEAKER LEVEL)
	SWITCHES	
S1, S2	1-516-081-00	Slide (INPUT)
S3	1-516-583-00	Pushbutton, 2-key (FUNCTION)
S4	1-516-584-00	Pushbutton, 2-key (METER SENS.)
S5	1-516-586-00	Rotary (SPEAKER SELECTOR)
S6	1-516-585-00	Pushbutton (POWER)
	MISCELLANEOUS	
CNJ1	1-509-403-00	Outlet, ac

Ref. No.	*Part No.*	*Description*
CNP1	1-534-992-00	Cord, power
CP1	1-231-057-00	Encapsulated Component
F1, F2	1-532-349-00	Fuse, 4 A
J101(J201) J102(J202)	1-536-352-00	Jack, phono; 4-p
PL301	1-518-158-00	Lamp, power
TM301～ TM303	1-535-090-00	Terminal Strip (SPEAKER)
VS1	1-526-520-11	Selector, voltage
	1-509-667-00	Socket, transistor
	1-520-186-22	Meter, peak program
	1-533-089-00	Holder, fuse; 2-p
	1-536-354-00	Pin, terminal
Pth701 Pth751	1-800-340-00	Thermistor (Positive)

ACCESSORIES AND PACKING MATERIALS

Part No.	*Description*
X-3701-029-0	Card Ass'y, warranty
3-701-020-00	Bag, polyethylene; instruction manual
3-701-300-00	Bag, polyethylene; unit
3-701-730-00	Bag, polyethylene; IBM card
3-701-742-00	Card, IBM
3-780-480-21	Manual, instruction
4-836-257-00	Cushion, side
4-836-258-00	Cushion, lower
4-836-259-00	Cushion
4-838-607-00	Carton